3540

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Tipton, et al.

Application No.: 10/672,311

Filed: September 26, 2003

Title: METHOD OF POROGEN REMOVAL FROM POROUS LOW-K FILMS USING UV RADIATION

Attorney Docket No.: NOVLP075/NVLS-000820

Examiner: COLEMAN, WILLIAM D

Group: 2823

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail on June 27, 2005 in an envelope addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

Signed: _____

Tara Hayden

INFORMATION DISCLOSURE STATEMENT BEFORE FINAL ACTION OR NOTICE OF ALLOWANCE (37 CFR §§ 1.56 AND 1.97(c))

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The references listed in the attached PTO Form 1449, a copy of which is attached, may be material to examination of the above-identified patent application. Applicants submit this reference in compliance with their duty of disclosure pursuant to 37 CFR §§1.56 and 1.97. The Examiner is requested to make this citation of official record in this application.

This Information Disclosure Statement is not to be construed as a representation that a search has been made, that additional information material to the examination of this application does not exist, or that this reference indeed constitutes prior art.

This Information Disclosure Statement is being filed after the mailing date of the first Office Action on the merits, or after three months of the filing date of this application, whichever event occurred last, but it is believed before the mailing date of either: (i) a final action under §1.113 or (ii) a notice of allowance under §1.311, whichever occurs first.

Accompanying this Information Disclosure Statement is

☐ a statement as specified in 37 CFR 1.97(e); or

☒ the fee set forth in 37 CFR 1.17(p).

If fees are due, enclosed is our Check No. 10791 for $180.00 in payment of the Information Disclosure Statement Fee. If it is determined that any additional fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 500388 (Order No. NOVLP075).

Respectfully submitted,
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The PTO did not receive the following listed item(s) a check # 180 but $175

Form 1449 (Modified)	Atty Docket No.	Application No.:
	NOVLP075/NVLS-000820	10/672,311
Information Disclosure Statement By Applicant	Applicant: Tipton et al.	
	Filing Date	Group
(Use Several Sheets if Necessary)	September 26, 2003	2823

U.S. Patent Documents

Examiner Initial	No.	Patent No.	Date	Patentee	Class	Sub-class	Filing Date
	A1	4,882,008	11.21.89	Garza et al.			
	A2	6,329,062	12.11.01	Gaynor			
	A3	6,268,276	07.31.01	Chan et al.			
	A4	6,177,329	01.23.01	Pang			
	A5	5,920,790	07.1999	Wetzel et al.			
	A6	2003/0119307	06.2003	Bekiaris et al.			
	A7	6,596,467	07.22.03	Gallagher et al.			
	A8	6,667,147	12.23.03	Gallagher et al.			
	A9	6,312,793	11.06.01	Grill et al.			
	A10	6,576,345	06.10.03	Cleemput et al.			
	A11	6,677,251	01.2004	Lu et al.			
	A12	6,812,043	11.2004	Bao et al.			
	A13	6,831,284	12.2004	Demos et al.			
	A14	2002/0106500	08.2002	Albano et al.			
	A15	2003/0064607	04.2003	Leu et al.			
	A16	2004/0069410	04.2004	Moghadam et al.			
	A17	6,756,085	06.29.04	Waldfried et al.			

Foreign Patent or Published Foreign Patent Application

Examiner Initial	No.	Document No.	Publication Date	Country or Patent Office	Class	Sub-class	Translation Yes	Translation No
	B1	WO95/07543	03.16.95	WIPO			X	

Examiner	Date Considered

Examiner: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	C1	Humayun et al., "Method for Forming Porous Films By Porogen Removel Combined Wtih In SITU Surface Modification", Novellus Corporation, Application No. 10/404,693, filed 3/31/03, pages 1-32. Atty. Docket No. NOVLP064/NVLS-0007
	C2	Tipton et al., "Method for Removal of Porogens From Porous Low-K Films Using Supercritical Fluids", Novellus Systems, Inc., Application No. 10/672,305, filed 9/26/03, pages 1-32. Atty. Docket No. NOVLP069/NVLS-000821
	C3	Cho et al., "Method and Apparatus for UV Exposure of Low Dielectric Constant Materials for Porogen Removal and Improved Mechanical Properties", Novellus Systems, Inc., Application No. 10/800,377, filed 3/11/04, pages 1-31. Atty. Docket No. NOVLP089/NVLS-2887
	C4	Wu et al., "Method and Apparatus of UV Exposure of Low Dielectric Constant Materials for Porogen Removal and Improved Mechanical Properties", Novellus Systems, Inc., Application No. 10/807,680, filed 3/23/04, pages 1-34. Atty. Docket No. NOVLP097/NVLS-2906
	C5	Bandyopadhyay et al., "Method to Improve Mechanical Strength of Low-K Dielectric Film Using Modulated UV Exposure", U.S. Patent Application No. 10/825,888, filed April 16, 2004 (Atty Dkt: NOVLP088US/NVLS-2882)
	C6	R.D. Miller et al., "Phase-Separated Inorganic-Organic Hybrids for Microelectronic Applications," MRS Bulletin, October 1997, Pages 44-48
	C7	Jin et al., "Nanoporous Silica as an Ultralow-*k* Dielectric," MRS Bulletin, October 1997, Pages 39-42
	C8	Asoh et al., "Fabrication of Ideally Ordered Anodic Porous Alumina with 63 nm Hole Periodocity Using Sulfuric Acid," J. Vac. Sci. Technol. B 19(2), Mar/Apr 2001, Pages 569-572
	C9	Asoh et al., "Conditions for Fabrication of Ideally Ordered Anodic Porous Alumina Using Pretextured Al," Journal of the Electrochemica Society, 148 (4) B152-B156 (2001) Pages B152-B156
	C10	Holland et al., "Nonlithographic Technique for the Production of Large Area High Density Gridded Field Sources," J. Vac. Sci. Technol. B 17(2), Mar/Apr. 1999, Pages 580-582
	C11	Masuda et al. "Highly Ordered Nanochannel-Array Architecture in Anodic Alumina," App. Phys. Lett. 71(19), November 1997, Pages 2770-2772
	C12	Clube et al., "White Paper from Holotronic Technologies SA; downloaded from www.hdotronic.com/whitepaper/fine-patt.pdf on March 12, 2002

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Other Documents

Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	C13	Meli et al., "Self-Assembled Masks for the Transfer of Nanometer-Scale Patterns into Surfaces: Characterization by AFM and LFM", Nano Letters, Vol. 2, No. 2, 2002, 131-135
	C14	"Shipley Claims Porous Low K Dielectric Breakthrough," Press Release March 17, 2003.
	C15	Jeffrey M. Calvert and Michael K. Gallagher, Semiconductor International, 26 (12), 56 (2003).
	C16	Van Bavel et al., Future Fab International, 16, (2004).
	C17	Caluwaerts et al, "Post Patterning Meso Porosity Creation: A Potential Solution For Pore Sealing," IITC 2003.
	C18	Peter Singer, "New Materials and Designs to Improve Transistor Performance", April 1, 2004, Semiconductor International.
	C19	Ghani et al, "A 90nm High Volume Manufacturing Logic Technology Featuring Novel 45nm Gate Length Strained Silicon CMOS Transistors", IEEE, © 2003.
	C20	Bhadri N. Varadarajan, "Tensile Silicon Nitride – P1264 NESL", C & F Study, August 21, 2003.
	C21	Varadarajan, et al., "Strained Transistor Architecture and Method", Novellus Systems, Inc., Appln No. 10/923,259, filed August 20,2004, pages 1-24. [Atty Docket No. NOVLP108/NVLS-2933].
	C22	Niu et al., "Methods For Improving The Cracking Resistance Of Low-K Dielectric Materials", U.S. Application No. 10/860,340, filed June 2, 2004, (Atty Dkt: NOVLP099)
	C23	Niu et al., "Methods For Improving The Cracking Resistance Of Low-K Dielectric Materials", U.S. Application No. 10/860,340, Office Action dated March 2, 2005, (Atty Dkt: NOVLP099)
	C24	Niu et al., "Methods For Improving The Cracking Resistance Of Low-K Dielectric Materials", U.S. Application No. 10/860,340, Final Office Action dated June 13, 2005, (Atty Dkt: NOVLP099)
	C25	Wang et al., "Plasma Detemplating And Silanol Capping Of Porous Dielectric Films", U.S. Application No. 10/785,235, filed February 23, 2004 (Atty Dkt: NOVLP085)
	C26	Varadarajan et al., "Tensile Dielectric Films Using UV Curing", U.S. Application No. 10/972,084, filed October 22, 2004 (Atty Dkt: NOVLP122)
	C27	Fox et al., "Method For Improving Mechanical Properties Of Low Dielectric Constant Materials", U.S. Application No. 10/849,568, filed May 18, 2004 (Atty Dkt: NOVLP083)

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Examiner Initial	No.	Author, Title, Date, Place (e.g. Journal) of Publication
	C28	Fox et al., "Methods For Producing Low-Stress Carbon-Doped Oxide Films With Improved Integration Properties", U.S. Application No. 10/987,208, filed November 12, 2004 (Atty Dkt: NOVLP104)
	C29	Van Den Hoek et al., "VLSI Fabrication Processes For Introducing Pores Into Dielectric Materials," U.S. Application No. 11/050,621, filed January 31, 2005 (Atty Dkt: NOVLP100)
	C30	Draeger et al., "Creation Of Porosity In Low-K Films By Photo-Disassociation Of Imbedded Nanoparticles," U.S. Application No. 11/146,456, filed June 6, 2005 (Atty Dkt: NOVLP100X1)
	C31	Wu et al., "Methods For Producing Low Stress Porous Low-K Dielectric Materials Using Precursors With Organic Functional Groups", U.S. Application No. 10/927,777, filed August 27, 2004 (Atty Dkt: NOVLP106)
	C32	Wu et al., "Methods For Improving Integration Performance Of Low Stress CDO Films", U.S. Application No. 10/941,502, filed September 14, 2004 (Atty Dkt: NOVLP107)
	C33	Cho et al., "Methods of Improving Porogen Removal and Film Mechanical Strength in Producing Ultra Low-K Carbon Doped Oxide Films Using Radical Photopolymerization", U.S. Application No. 10/982,654, filed November 5, 2004 (Atty Dkt: NOVLP115)

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